

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

JEROLD SHAN

Serial No.: 09/852,611

Filed: May 9, 2001

For: AN ON-LINE SHOPPING
CONVERSION SIMULATION
MODULE

Group Art Unit: 3621

Examiner: Reagan, James A.

Conf. No.: 4891

APPEAL BRIEF
ON APPEAL TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

Mail Stop Appeal Brief - Patent
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Appellant in the above-captioned patent application appeals the final rejection of claims 1, 4, 6, 7, 9, 10, 13, 15, 16 and 18-41 set forth in the Office Action mailed June 13, 2006, a Notice of Appeal and Petition for One-Month Extension of Time having been timely filed on October 11, 2006.

I. REAL PARTY IN INTEREST

The real party in interest in this application is Hewlett-Packard Development Company L.P., pursuant to an assignment recorded on January 14, 2002, at reel/frame

012485/0846, and a subsequent assignment recorded on September 30, 2003, at reel/frame 014061/0492.

II. RELATED APPEALS, INTERFERENCES AND PROCEEDINGS

Appellant is not aware of any related appeals, interferences or judicial proceedings.

III. STATUS OF CLAIMS

Claims 1, 4, 6, 7, 9, 10, 13, 15, 16 and 18-41 have been finally rejected and are the subject matter of this appeal. Objection has been made to claims 8 and 17 as being dependent upon a rejected base claim, with an indication that such claims would be allowed if rewritten into independent form to include all of the limitations of the base claim and any intervening claims. In accordance with 37 C.F.R. § 1.192(c)(9), a copy of the claims involved in this appeal is included in the Claims Appendix attached hereto.

IV. STATUS OF THE AMENDMENTS

No amendment has been filed subsequent to the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention concerns systems, methods and techniques for analyzing the effectiveness of previously offered sales promotions and for targeting delivery of new sales promotions. Generally speaking, in accordance with the present invention, data pertaining to on-line shopping activity, attributes of different promotions, and profiles of the individual shoppers are provided to a model which is used to determine

the effectiveness of sales promotions, e.g., based on the past history, demographics or other profile information for the shoppers.

More specifically, independent claims 1 and 10 are directed toward predicting whether an on-line shopper will be converted into becoming a purchaser of an item based on sales promotions offered by an on-line vendor. See, e.g., page 5 line 18 to page 6 line 6. Initially, the following information is stored: customer profile information corresponding to a plurality of on-line shoppers, web log information corresponding to the plurality of on-line shoppers, and promotion attributes corresponding to a plurality of sales promotions that have been offered. See, e.g., page 3 lines 7-10 and page 6 line 21 to page 8 line 7 of the Specification. Such information then is input into a model for simulating shopping behavior as a function of the customer profile information and the promotion attributes. See, e.g., page 3 lines 10-13 of the Specification. Finally, the model is used to target delivery of future sales promotions. See, e.g., page 2 lines 15-20 of the Specification.

Independent claim 35 is directed toward predicting what types of on-line shoppers will make purchases based on offered sales promotions. See, e.g., page 5 line 18 to page 6 line 6. Initially, the following information is obtained: profile information for a plurality of shoppers; a set of promotion attributes pertaining to sales promotions that were displayed to the shoppers; and behavioral information regarding the on-line shopping behaviors of the shoppers, including the on-line shopping behaviors during times that the sales promotions were displayed. See, e.g., page 3 lines 7-13, page 5 lines 21-27 and page 6 line 21 to page 8 line 7 of the Specification. Based on the behavioral information, a mathematical model is used to relate the

promotion attributes to the profile information in order to estimate effectiveness of a particular sales promotion with respect to at least one specified shopper. See, *e.g.*, page 2 lines 10-11, page 3 lines 10-13 and page 10 lines 14-27 of the Specification.

In certain more particular embodiments of the invention, the model is used to tailor sales promotions to individual shoppers (as recited in dependent claims 19, 27 and 37). See, *e.g.*, page 2 lines 15-20 of the Specification. In some embodiments, sales promotions are automatically customized to a shopper based on customer profile information for such shopper (as recited in dependent claims 20, 28 and 38). See, *e.g.*, page 2 lines 18-20 of the Specification. One representative embodiment (recited in dependent claims 24, 32 and 39) involves using a simulator based on the mathematical model, varying promotion attributes input into the simulator, and then observing results generated by the simulator. See, *e.g.*, page 8 lines 3-7 of the Specification. In some embodiments, the model is continuously updated and improved based on new information (as recited in dependent claims 25, 33 and 40). See, *e.g.*, page 9 lines 6-12 of the Specification. In still further embodiments, an optimization engine is used to generate statistically driven promotion plans that have been optimized with respect to at least one objective function (as recited in dependent claims 26, 34 and 41). See, *e.g.*, page 14 lines 10-27 of the Specification.

VI. GROUNDS OF REJECTION

Claims 1, 4, 6, 7, 9, 10, 13, 15, 16 and 18-41 stand rejected under 35 USC § 103(a) over U.S. Patent 6,480,844 (Cortes) in view of U.S. Patent 5,970,469 (Scroggie).

VII. ARGUMENT

Authority Pertaining to Issues on Appeal

Obviousness Rejections Under 35 USC § 103

The requirements for establishing a *prima facie* case of a § 103 obviousness rejection have been stated as follows.

"a proper analysis under § 103 requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable expectation of success. [citing In re Dow Chemical Co., 837 F.2d 469, 473, 5 U.S.P.Q.2D 1529, 1531 (Fed. Cir. 1988).] Both the suggestion and the reasonable expectation of success must be found in the prior art, not in the applicant's disclosure."

In re Vaeck, 947 F.2d 488, 493 (Fed. Cir. 1991).

Thus, MPEP § 2142 requires that in order to establish a *prima facie* case of obviousness, the Examiner must cite prior art references that teach or suggest all of the claim limitations and, if more than one such reference is required to disclose all such limitations, there must be some suggestion or motivation, either in the prior art references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings.

However, as to motivation to combine, MPEP § 2143.01 provides:

"A statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. Ex parte Levengood, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See also In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000) (Court reversed obviousness rejection involving technologically simple concept because there was no finding as to the principle or specific

understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention); Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999) (The level of skill in the art cannot be relied upon to provide the suggestion to combine references.)."

In addition, the Federal Circuit has held:

"Rarely, however, will the skill in the art component operate to supply missing knowledge or prior art to reach an obviousness judgment. See W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 U.S.P.Q. (BNA) 303, 312-13 (Fed.Cir.1983) ("To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher."). Skill in the art does not act as a bridge over gaps in substantive presentation of an obviousness case, but instead supplies the primary guarantee of objectivity in the process. See Ryko Mfg. Co. v. Nu-Star, Inc., 950 F.2d 714, 718, 21 U.S.P.Q.2D (BNA) 1053, 1057 (Fed.Cir.1991)."

Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1324 (Fed. Cir. 1999).

In other words, motivation to combine features from different references must be supported by actual evidence and not mere hindsight speculation, which almost necessarily will be influenced by the knowledge gained from the Applicant's own disclosure.

Rejection Under 35 USC § 103(a) over Cortes in view of Scroggie

Claims 1, 10, 25 and 33

Independent claims 1 and 10 are directed toward predicting whether an on-line shopper will be converted into becoming a purchaser of an item based on sales promotions offered by an on-line vendor. Initially, the following information is stored: customer profile information corresponding to a plurality of on-line shoppers, web log information corresponding to the plurality of on-line shoppers, and promotion attributes

corresponding to a plurality of sales promotions that have been offered. Such information then is input into a model for simulating shopping behavior as a function of the customer profile information and the promotion attributes. Finally, the model is used to target delivery of future sales promotions.

The foregoing combination of features is not disclosed or suggested by the applied art. For example, no permissible combination of Cortes and Scroggie would have disclosed or suggested at least the combination of (i) inputting customer profile information, customer web log information and promotion attributes into a model for simulating shopping behavior as a function of the customer profile information and the promotion attributes and (ii) using such a model to target delivery of future sales promotions.

In this regard, Cortes is directed to techniques for inferring behavioral characteristics based on transaction data. See, *e.g.*, Cortes's Title and Abstract. The main embodiment discussed in Cortes pertains to classifying telephone calls as either "business" or "residential". See, *e.g.*, column 5 lines 51-53 of Cortes. In addition, Cortes also asserts that its techniques can be applied to credit card purchases, telephone call records, packet headers in data communications and stock transactions. See, *e.g.*, column 2 lines 21-25 of Cortes.

Even assuming this latter assertion is true (and Appellant does not express an opinion in this regard), nothing in Cortes even remotely suggests simulating on-line shopping behavior as a function of customer profile information and sales promotion attributes. While Appellant acknowledges that Cortes uses certain common statistical

techniques, as asserted by the Examiner, those techniques are used for an entirely different purpose than the present invention.

That is, Cortes appears to be entirely concerned with *classifying behavior* based solely on *the behavioral data itself*. See, e.g., column 2 lines 61-64 of Cortes:

The present invention examines the volume of data to ascertain whether correlations exist between particular pieces of the data and particular types of transactions or transaction parties. Once a model or set of rules is established based on this analysis, the model or set of rules can be applied to the individual parties to examine their behavior in relationship to these rules and to *classify* [emphasis added] these parties accordingly. This process can be referred to as making inferences about the parties or the underlying transactions.

In contrast, independent claims 1 and 10 are more concerned with how particular sales promotions (which generally are not directly controlled by the individual shopper) affect or influence different on-line shoppers' shopping behavior.

For example, independent claims 1 and 10 recite the feature of using the invention's model to target delivery of future sales promotions. Not only does Cortes fail to disclose or to suggest this feature of the invention, but Cortes is not even analogous prior art with respect to the problem addressed by the present invention.

That is, Cortes does not appear to be concerned at all with how *any* external factors affect consumer shopping behavior, or any other type of behavior for that matter. In fact, although Cortes generally mentions certain commercial transactions, it contains absolutely no disclosure regarding consumer marketing or sales promotions. Accordingly, absent some specific teaching, one of ordinary skill in the relevant art would not have looked to Cortes as a reference when considering how to influence on-line shopping behavior.

In the current Office Action, the Examiner asserts that, "Cortes discloses the old and well-know method of capturing data to build models and make inferences based on historical events." However, even if Cortes in fact teaches such a general concept, it certainly does not disclose or suggest anything at all about applying any such concept within the context of sales promotions, and even the Examiner has not asserted that it does.

The Examiner also asserts, "Clearly, Cortes is disclosing gathering data to determine future behavior of an entity." However, such a conclusion is not at all clear, and the Examiner has not cited any support for such an assertion. To the contrary, the technique described in Cortes appears to be directed solely toward *classifying* behavior patterns (e.g., as pertaining to either a residential or a business telephone call) and not to determining *future* behavior of an entity. Once again, however, even if Cortes had disclosed prediction of future behavior, it still would not have suggested anything at all about generating or using such predictions in the context of influencing shopping behavior.

Scroggie discusses the delivery of purchase incentives (primarily coupons) to consumers over the Internet. The process for determining which consumers receive which purchase incentives is not clearly described in Scroggie. However, the extent to which delivery is customized to individual consumers in Scroggie's technique appears to be very limited. In fact, it appears that the only such customization is based on a consumer-supplied indication of his or her geographic location (column 6 lines 44-47) and/or based on the consumer's purchasing history (column 12 lines 8-65). As to the latter, no significant detail is provided in Scroggie as to how purchase incentives are

based on purchase history. Presumably, Scroggie's system simply delivers purchase incentives for products that are identical (or possibly similar) to those previously purchased by the particular consumer.

In any event, Scroggie clearly does not disclose or suggest anything about inputting customer profile information, web log information and promotion attributes into a model for simulating shopping behavior of on-line shoppers as a function of the customer profile information and the promotion attributes, as recited in independent claims 1 and 10. In fact, Scroggie does not appear to discuss the creation or use of a model for any purpose whatsoever. Rather, Scroggie is almost exclusively devoted to the straightforward task of delivering purchase incentives to consumers in a particular manner, *i.e.*, over the Internet.

The Examiner asserts that Scroggie discloses the feature of storing web log data, and cites to column 12, lines 52+ of Scroggie in support of this assertion. However, that portion of Scroggie has been studied in detail and is only seen to disclose a procedure of storing a consumer's purchase history and then e-mailing purchase incentives based on that history.

Moreover, the referenced purchase history presumably pertains only to purchases made at local retailers, given the fact that the entire disclosure of Scroggie appears to concern such purchases, and not to Web-based purchases. Still further, even the Examiner does not attempt to argue that Scroggie generates, uses or even mentions the desirability of generating or using a model as presently claimed.

In short, significant features of the present claims are absent from both Cortes and Scroggie. Accordingly, no permissible combination of these two references could have suggested independent claims 1 and 10.

Still further, Cortes and Scroggie relate to very different fields of art. As noted above, Cortes concerns techniques for inferring behavioral characteristics based on transaction data pertaining to the behavior itself, and does not say anything at all about purchase incentives. Scroggie concerns the delivery of purchase incentives to consumers over the Internet, and does not say anything at all about modeling behavior for purposes of classification. As a result, there would have been no motivation to combine Cortes and Scroggie in any respect whatsoever, much less in any way that would have suggested the invention as recited in independent claims 1 and 10.¹

Accordingly, independent claims 1 and 10, together with their dependent claims 25 and 33, are believed to be allowable over the applied art.

Claims 4 and 13

Claim 4 depends from independent claim 1 and claim 13 depends from independent claim 10. Each recites the further limitation that the recited model for simulating shopping behavior comprises a logistic regression model. This additional feature of the invention is not disclosed or suggested by the applied art.

The Examiner cites column 7 line 47 of Cortes as allegedly showing this feature of the invention. However, Appellant has studied that portion of Cortes in detail and it is only seen to discuss using logistic regression for classification purposes.

¹ The Examiner argues that obviousness is determined by what the cited references reasonably would suggest to one of ordinary skill in the art. However, the Examiner has cited no evidence other than Cortes and Scroggie to indicate what would have been suggested to one of ordinary skill in the art based on the disclosures of Cortes and Scroggie.

For these additional reasons, claims 4 and 13 are believed to be allowable over the applied art.

Claims 6 and 15

Claim 6 depends from dependent claim 4 and claim 15 depends from dependent claim 13. Each recites the further limitation that the recited model for simulating shopping behavior is partially based on traditional logistical regression theory and partially on the maximum utility theory. This additional feature of the invention is not disclosed or suggested by the applied art.

In this regard, the Examiner states:

“... the Examiner takes Official Notice that these variations of logical regression analysis are old and well-known in the statistical analysis arts as well as the survey and marketing arts. It would have been obvious, therefore, to one of ordinary skill in the art at the time of the invention to combine the data mining principles and regression analysis techniques of Cortes with the established use of traditional logistical regression analysis and maximum expected utility models theory analysis because they provide insight to customer spending habits that may be extrapolated and used to maximize profits and product throughput.”

Appellant continues to take no position regarding the accuracy of the subject matter of which the Examiner has taken official notice. However, even if the statement is correct, there is absolutely no evidence that one of ordinary skill in the art would have been motivated based on such information to incorporate anything into Cortes's technique, much less to substantially modify Cortes's technique in order to achieve the invention, as recited in claims 6 and 15. See, e.g., the portion of MPEP § 2143.01 quoted above.

For these additional reasons, claims 6 and 15 are believed to be allowable over the applied art.

Claims 7 and 16

Claim 7 depends from independent claim 1 and claim 16 depends from independent claim 10. Each recites the further limitation that the customer profile information input into the recited model for simulating shopping behavior includes age, sex, religion, income, ethnicity, marital status, geographical location, number of children, interests, hobbies, spending habits, and zip code. This additional feature of the invention is not disclosed or suggested by the applied art.

In this regard, the Examiner states:

“... the Examiner takes Official Notice that these attributes and parameters are old and well-known in the demographic utilization arts as well as the survey and marketing arts. It would have been obvious, therefore, to one of ordinary skill in the art at the time of the invention to combine the data mining principles and regression analysis techniques of Cortes with the established use of demographics and online activities of consumers because they provide insight to customer spending habits that may be extrapolated and used to maximize profits and product throughput.”

Appellant continues to take no position regarding the accuracy of the subject matter of which the Examiner has taken official notice. However, even if the statement is correct, there is absolutely no evidence that one of ordinary skill in the art would have been motivated based on such information to incorporate any such information into Cortes's technique in any manner whatsoever, much less to substantially modify Cortes's technique in order to achieve the invention, as recited in claims 7 and 16. See, e.g., the portion of MPEP § 2143.01 quoted above.

For these additional reasons, claims 7 and 16 are believed to be allowable over the applied art.

Claims 9 and 18

Claim 9 depends from independent claim 1 and claim 18 depends from independent claim 10. Each recites the further limitation that the sales promotion attributes input into the recited model for simulating shopping behavior include one of sales, upgrades, extended warranties, buy-one-get-one free, financing packages, free options, rebates, coupons, donations to charities, and free gifts. This additional feature of the invention is not disclosed or suggested by the applied art.

In this regard, the Examiner asserts that “Cortes discloses the use of regression analysis techniques as applied to online consumer purchasing...” and then concludes that it would have been obvious to input the recited sales promotion attributes into Cortes’s model. However, as noted in the discussion of the corresponding independent claims, Cortes solely is concerned with classifying behavior based on the behavior itself. Thus, while Cortes’s technique potentially may be used to classify a consumer purchases based on characteristics of those purchases, nothing in Cortes suggests modeling based on sales promotion attributes and certainly not any of the specific attributes recited in claims 9 and 18.

For these additional reasons, claims 9 and 18 are believed to be allowable over the applied art.

Claims 21 and 29

Claim 21 depends from independent claim 1 and claim 29 depends from independent claim 10. Each recites the further limitation of storing product information corresponding to a plurality of products offered for sale by the on-line vendor and inputting the product information into the recited model for simulating shopping

behavior, with the shopping behavior also being simulated as a function of the product information. This additional feature of the invention is not disclosed or suggested by the applied art.

As to this feature of the invention, the Examiner simply "takes Official Notice that it is old and well-known in the commerce and transactional arts to use data models and simulations to forecast buyer behavior, as well as use an iterative process to continually update buyer data to increase profitability."

Appellant continues to take no position regarding the accuracy of the subject matter of which the Examiner has taken official notice. However, even if the statement is correct, it is unclear how that statement relates to the present feature of the invention or how it would have motivated one to substantially modify Cortes's technique in order to achieve the invention, as recited in claims 21 and 29.

For these additional reasons, claims 21 and 29 are believed to be allowable over the applied art.

Claims 22 and 30

Claim 22 depends from independent claim 1 and claim 30 depends from independent claim 10. Each recites the further limitation of using the recited model for simulating shopping behavior to compute a percentage likelihood that a shopper will be converted into becoming a purchaser. This additional feature of the invention is not disclosed or suggested by the applied art.

As to this feature of the invention, the Examiner simply "takes Official Notice that it is old and well-known in the commerce and transactional arts to use data models and

simulations to forecast buyer behavior, as well as use an iterative process to continually update buyer data to increase profitability.”

Appellant continues to take no position regarding the accuracy of the subject matter of which the Examiner has taken official notice. However, even if the statement is correct, it is unclear how that statement relates to the present feature of the invention or how it would have motivated one to substantially modify Cortes's technique in order to achieve the invention, as recited in claims 22 and 30.

For these additional reasons, claims 22 and 30 are believed to be allowable over the applied art.

Claims 23 and 31

Claim 23 depends from independent claim 1 and claim 31 depends from independent claim 10. Each recites the further limitation of using the model to simulate a conversion of a shopper into a purchaser. This additional feature of the invention is not disclosed or suggested by the applied art.

As to this feature of the invention, the Examiner simply “takes Official Notice that it is old and well-known in the commerce and transactional arts to use data models and simulations to forecast buyer behavior, as well as use an iterative process to continually update buyer data to increase profitability.”

Appellant continues to take no position regarding the accuracy of the subject matter of which the Examiner has taken official notice. However, even if the statement is correct, it is unclear how that statement relates to the present feature of the invention or how it would have motivated one to substantially modify Cortes's technique in order to achieve the invention, as recited in claims 23 and 31.

For these additional reasons, claims 23 and 31 are believed to be allowable over the applied art.

Claims 35 and 40

Independent claim 35 is directed toward predicting what types of on-line shoppers will make purchases based on offered sales promotions. Initially, the following information is obtained: profile information for a plurality of shoppers; a set of promotion attributes pertaining to sales promotions that were displayed to the shoppers; and behavioral information regarding on-line shopping behaviors of the shoppers, including the on-line shopping behaviors during times that the sales promotions were displayed. Based on the behavioral information, a mathematical model is used to relate the promotion attributes to the profile information in order to estimate effectiveness of a particular sales promotion with respect to at least one specified shopper.

The foregoing combination of features is not disclosed or suggested by the applied art. For example, no permissible combination of Cortes and Scroggie would have disclosed or suggested at least the feature of using a mathematical model to relate sales promotion attributes to shopper profile information, based on behavioral information regarding on-line shopping behaviors of the shoppers, in order to estimate effectiveness of a particular sales promotion with respect to at least one specified shopper.

In this regard, Cortes is directed to techniques for inferring behavioral characteristics based on transaction data. See, *e.g.*, Cortes's Title and Abstract. The main embodiment discussed in Cortes pertains to classifying telephone calls as either "business" or "residential". See, *e.g.*, column 5 lines 51-53 of Cortes. In addition,

Cortes also asserts that its techniques can be applied to credit card purchases, telephone call records, packet headers in data communications and stock transactions. See, e.g., column 2 lines 21-25 of Cortes.

Even assuming this latter assertion is true (and Appellant do not express an opinion in this regard), nothing in Cortes even remotely suggests the above-referenced feature of the invention. While Appellant acknowledges that Cortes uses certain common statistical techniques, as asserted by the Examiner, those techniques are used for an entirely different purpose than the present invention.

That is, Cortes appears to be entirely concerned with *classifying behavior* based solely on *the behavioral data itself*. See, e.g., column 2 lines 61-64 of Cortes:

The present invention examines the volume of data to ascertain whether correlations exist between particular pieces of the data and particular types of transactions or transaction parties. Once a model or set of rules is established based on this analysis, the model or set of rules can be applied to the individual parties to examine their behavior in relationship to these rules and to *classify* [emphasis added] these parties accordingly. This process can be referred to as making inferences about the parties or the underlying transactions.

In contrast, independent claim 35 is more concerned with the effectiveness of sales promotions (which generally are not directly controlled by the individual shopper) in affecting or influencing different on-line shoppers' shopping behavior.

For example, independent claim 35 recites the feature of estimating the effectiveness of a particular sales promotion with respect to at least one specified shopper. Not only does Cortes fail to disclose or to suggest this feature of the invention, but Cortes is not even analogous prior art with respect to the problem addressed by the present invention.

That is, Cortes does not appear to be concerned at all with how *any* external factors affect consumer shopping behavior, or any other type of behavior for that matter. In fact, although Cortes generally mentions certain commercial transactions, it contains absolutely no disclosure regarding consumer marketing or sales promotions. Accordingly, absent some specific teaching, one of ordinary skill in the relevant art would not have looked to Cortes as a reference when considering how to influence on-line shopping behavior.

In the current Office Action, the Examiner asserts that, "Cortes discloses the old and well-know method of capturing data to build models and make inferences based on historical events." However, even if Cortes in fact teaches such a general concept, it certainly does not disclose or suggest anything at all about applying any such concept within the context of sales promotions, and even the Examiner has not asserted that it does.

The Examiner also asserts, "Clearly, Cortes is disclosing gathering data to determine future behavior of an entity." However, such a conclusion is not at all clear, and the Examiner has not cited any support for such an assertion. To the contrary, the technique described in Cortes appears to be directed solely toward *classifying* behavior patterns (e.g., as pertaining to either a residential or a business telephone call) and not to determining likely *future* behavior of an entity with respect to a particular sales promotion. Once again, however, even if Cortes had disclosed prediction of future behavior, it still would not have suggested anything at all about generating or using such predictions in the context of influencing shopping behavior.

Scroggie discusses the delivery of purchase incentives (primarily coupons) to consumers over the Internet. The process for determining which consumers receive which purchase incentives is not clearly described in Scroggie. However, the extent to which delivery is customized to individual consumers in Scroggie's technique appears to be very limited. In fact, it appears that the only such customization is based on a consumer-supplied indication of his or her geographic location (column 6 lines 44-47) and/or based on the consumer's purchasing history (column 12 lines 8-65). As to the latter, no significant detail is provided in Scroggie as to how purchase incentives are based on purchase history. Presumably, Scroggie's system simply delivers purchase incentives for products that are identical (or possibly similar) to those previously purchased by the particular consumer.

In any event, Scroggie clearly does not disclose or suggest anything about using a mathematical model to relate sales promotion attributes to shopper profile information, based on behavioral information regarding on-line shopping behaviors of the shoppers, in order to estimate effectiveness of a particular sales promotion with respect to at least one specified shopper, as recited in independent claim 35. In fact, Scroggie does not appear to discuss the creation or use of a model for any purpose whatsoever. Rather, Scroggie is almost exclusively devoted to the straightforward task of delivering purchase incentives to consumers in a particular manner, *i.e.*, over the Internet.

The Examiner asserts that Scroggie discloses the feature of storing web log data, and cites to column 12, lines 52+ of Scroggie in support of this assertion. However, that portion of Scroggie has been studied in detail and is only seen to disclose a procedure

of storing a consumer's purchase history and then e-mailing purchase incentives based on that history.

Moreover, the referenced purchase history presumably pertains only to purchases made at local retailers, given the fact that the entire disclosure of Scroggie appears to concern such purchases, and not to on-line purchases. Still further, even the Examiner does not attempt to argue that Scroggie generates, uses or even mentions the desirability of generating or using a model as presently claimed.

In short, significant features of the present claims are absent from both Cortes and Scroggie. Accordingly, no permissible combination of these two references could have suggested independent claim 35.

Still further, Cortes and Scroggie relate to very different fields of art. As noted above, Cortes concerns techniques for inferring behavioral characteristics based on transaction data pertaining to the behavior itself, and does not say anything at all about purchase incentives. Scroggie concerns the delivery of purchase incentives to consumers over the Internet, and does not say anything at all about modeling behavior for purposes of classification. As a result, there would have been no motivation to combine Cortes and Scroggie in any respect whatsoever, much less in any way that would have suggested the invention as recited in independent claim 35.²

Accordingly, independent claim 35, together with its dependent claim 40, is believed to be allowable over the applied art.

² The Examiner argues that obviousness is determined by what the cited references reasonably would suggest to one of ordinary skill in the art. However, the Examiner has cited no evidence other than Cortes and Scroggie to indicate what would have been suggested to one of ordinary skill in the art based on the disclosures of Cortes and Scroggie.

Claims 24, 32 and 39

Claim 24 depends from independent claim 1, claim 32 depends from independent claim 10, and claim 39 depends from independent claim 35. Each recites the further limitation of using a simulator based on the recited model, varying promotion attributes input into the simulator, and then observing results generated by the simulator. This additional feature of the invention is not disclosed or suggested by the applied art.

As to this feature of the invention, the Examiner simply “takes Official Notice that it is old and well-known in the commerce and transactional arts to use data models and simulations to forecast buyer behavior, as well as use an iterative process to continually update buyer data to increase profitability.”

Appellant continues to take no position regarding the accuracy of the subject matter of which the Examiner has taken official notice. However, even if the statement is correct, it is unclear how that statement relates to the present feature of the invention or how it would have motivated one to substantially modify Cortes's technique in order to achieve the invention, as recited in claims 24, 32 and 39. Such claims recite a particular type of simulation that is neither disclose nor suggested by Cortes, the general statement of which the Examiner has taken official notice, or any combination of the two.

For these additional reasons, claims 24, 32 and 39 are believed to be allowable over the applied art.

Claims 26, 34 and 41

Claim 26 depends from independent claim 1, claim 34 depends from independent claim 10, and claim 41 depends from independent claim 35. Each recites the further limitation of using an optimization engine to generate statistically driven sales promotion plans that have been optimized with respect to at least one objective function. This additional feature of the invention is not disclosed or suggested by the applied art.

As to this feature of the invention, the Examiner simply “takes Official Notice that it is old and well-known in the commerce and transactional arts to use data models and simulations to forecast buyer behavior, as well as use an iterative process to continually update buyer data to increase profitability.”

Appellant continues to take no position regarding the accuracy of the subject matter of which the Examiner has taken official notice. However, even if the statement is correct, it is unclear how that statement relates to the present feature of the invention or how it would have motivated one to substantially modify Cortes's technique in order to achieve the invention, as recited in claims 26, 34 and 41.

For these additional reasons, claims 26, 34 and 41 are believed to be allowable over the applied art.

Claim 36

Claim 36 depends from independent claim 35 and recites the further limitation of using the mathematical model, which relates the promotion attributes to the profile information in order to estimate effectiveness of a particular sales promotion with

respect to at least one specified shopper, to target delivery of future sales promotions. This additional feature of the invention is not disclosed or suggested by the applied art.

As to this feature of the invention, the Examiner simply "takes Official Notice that it is old and well-known in the commerce and transactional arts to use data models and simulations to forecast buyer behavior, as well as use an iterative process to continually update buyer data to increase profitability."

Appellant continues to take no position regarding the accuracy of the subject matter of which the Examiner has taken official notice. However, even if the statement is correct, it is unclear how that statement relates to the present feature of the invention or how it would have motivated one to substantially modify Cortes's technique in order to achieve the invention, as recited in claim 36.

For these additional reasons, claim 36 is believed to be allowable over the applied art.

VIII. CONCLUDING REMARKS

As Appellant has shown above, for a number of reasons, nothing in the cited references discloses, teaches, or suggests the invention recited by the claims on appeal. Appellant therefore respectfully submits that the claimed invention is patentably distinct over the applied art.

In view of the foregoing remarks, Appellant respectfully requests that the rejection of claims 1, 4, 6, 7, 9, 10, 13, 15, 16 and 18-41 be reversed and a Notice of Allowance issued.

Respectfully submitted,

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CLAIMS APPENDIX

Claims on Appeal

1. A method for predicting whether an on-line shopper will be converted into becoming a purchaser of an item based on sales promotions offered by an on-line vendor, comprising the steps of:

storing customer profile information corresponding to a plurality of on-line shoppers;

storing customer web log information corresponding to the plurality of on-line shoppers;

storing promotion attributes corresponding to a plurality of sales promotions that have been offered;

inputting the customer profile information, the web log information and the promotion attributes into a model for simulating shopping behavior as a function of the customer profile information and the promotion attributes; and

using the model to target delivery of future sales promotions.

2. (Canceled)

3. (Canceled)

4. The method of Claim 1, wherein the model comprises a logistic regression model.

5. (Canceled)

6. The method of Claim 4, wherein the model is partially based on traditional logistical regression theory and partially on the maximum utility theory.

7. The method of Claim 1, wherein customer profile information includes age, sex, religion, income, ethnicity, marital status, geographical location, number of children, interests, hobbies, spending habits, and zip code.

8. The method of Claim 1, wherein the customer web log information includes contains data regarding when a customer accessed a web site, how long the customer visited the web site, which items were of interest, how the customer heard about the web site, whether the customer saw a promotion, whether the customer was motivated to taking action as a result of the promotion, whether the customer inspected an item, whether the customer put the item back, whether the customer bought the item, and a quantity of items purchased.

9. The method of Claim 1, wherein the promotion attributes include one of sales, upgrades, extended warranties, buy-one-get-one free, financing packages, free options, rebates, coupons, donations to charities, and free gifts.

10. A computer-readable medium having stored thereon instructions for predicting whether an on-line shopper will be converted into becoming a purchaser of

an item based on sales promotions offered by an on-line vendor, the instructions comprising the steps of:

storing customer profile information corresponding to a plurality of on-line shoppers;

storing customer web log information corresponding to the plurality of on-line shoppers;

storing promotion attributes corresponding to a plurality of sales promotions that have been offered;

inputting the customer profile information, the web log information and the promotion attributes into a model for simulating shopping behavior as a function of the customer profile information and the promotion attributes; and

using the model to target delivery of future sales promotions.

11. (Canceled)

12. (Canceled)

13. The computer-readable medium of Claim 10, wherein the model comprises a logistic regression model.

14. (Canceled)

15. The computer-readable medium of Claim 13, wherein the model is partially based on traditional logistical regression theory and partially on the maximum utility theory.

16. The computer-readable medium of Claim 10, wherein customer profile information includes age, sex, religion, income, ethnicity, marital status, geographical location, number of children, interests, hobbies, spending habits, and zip code.

17. The computer-readable medium of Claim 10, wherein the customer web log information includes contains data regarding when a customer accessed a web site, how long the customer visited the web site, which items were of interest, how the customer heard about the web site, whether the customer saw a promotion, whether the customer was motivated to taking action as a result of the promotion, whether the customer inspected an item, whether the customer put the item back, whether the customer bought the item, and a quantity of items purchased.

18. The computer-readable medium of Claim 10, wherein the promotion attributes include one of sales, upgrades, extended warranties, buy-one-get-one free, financing packages, free options, rebates, coupons, donations to charities, and free gifts.

19. A method according to Claim 1, further comprising a step of using the model to tailor sales promotions to individual shoppers.

20. A method according to Claim 19, wherein sales promotions automatically are customized to a shopper based on customer profile information for said shopper.

21. A method according to Claim 1, further comprising steps of storing product information corresponding to a plurality of products offered for sale by the on-line vendor and inputting the product information into the model, and wherein the shopping behavior also is simulated as a function of the product information.

22. A method according to Claim 1, further comprising a step of using the model to compute a percentage likelihood that a shopper will be converted into becoming a purchaser.

23. A method according to Claim 1, further comprising a step of using the model to simulate a conversion of a shopper into a purchaser.

24. A method according to Claim 1, further comprising steps of using a simulator based on the model, varying promotion attributes input into the simulator, and then observing results generated by the simulator.

25. A method according to Claim 1, further comprising a step of continuously updating and improving the model based on new information.

26. A method according to Claim 1, further comprising a step of using an optimization engine to generate statistically driven sales promotion plans that have been optimized with respect to at least one objective function.

27. The computer-readable medium of Claim 10, wherein the instructions further comprise a step of using the model to tailor sales promotions to individual shoppers.

28. The computer-readable medium of Claim 27, wherein sales promotions automatically are customized to a shopper based on customer profile information for said shopper.

29. The computer-readable medium of Claim 10, wherein the instructions further comprise steps of storing product information corresponding to a plurality of products offered for sale by the on-line vendor and inputting the product information into the model, and wherein the shopping behavior also is simulated as a function of the product information.

30. The computer-readable medium of Claim 10, wherein the instructions further comprise a step of using the model to compute a percentage likelihood that a shopper will be converted into becoming a purchaser.

31. The computer-readable medium of Claim 10, wherein the instructions further comprise a step of using the model to simulate a conversion of a shopper into a purchaser.

32. The computer-readable medium of Claim 10, wherein the instructions further comprise steps of using a simulator based on the model, varying promotion attributes input into the simulator, and then observing results generated by the simulator.

33. The computer-readable medium of Claim 10, wherein the instructions further comprise a step of continuously updating and improving the model based on new information.

34. The computer-readable medium of Claim 10, wherein the instructions further comprise a step of using an optimization engine to generate statistically driven sales promotion plans that have been optimized with respect to at least one objective function.

35. A method for predicting what types of on-line shoppers will make purchases based on offered sales promotions, comprising:

obtaining profile information for a plurality of shoppers;

obtaining a set of promotion attributes pertaining to sales promotions that were displayed to the shoppers;

obtaining behavioral information regarding on-line shopping behaviors of the shoppers, including the on-line shopping behaviors during times that the sales promotions were displayed;

based on the behavioral information, using a mathematical model to relate the promotion attributes to the profile information in order to estimate effectiveness of a particular sales promotion with respect to at least one specified shopper.

36. A method according to Claim 35, further comprising a step of using the mathematical model to target delivery of future sales promotions.

37. A method according to Claim 35, further comprising a step of using the mathematical model to tailor sales promotions to individual shoppers.

38. A method according to Claim 37, wherein sales promotions automatically are customized to a shopper based on customer profile information for said shopper.

39. A method according to Claim 35, further comprising steps of using a simulator based on the mathematical model, varying promotion attributes input into the simulator, and then observing results generated by the simulator.

40. A method according to Claim 35, further comprising a step of continuously updating and improving the mathematical model based on new information.

41. A method according to Claim 35, further comprising a step of using an optimization engine to generate statistically driven promotion plans that have been optimized with respect to at least one objective function.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None